

L Number	Hits	Search Text	DB	Time stamp
-	3163	static same fuel	USPAT; US-PGPUB	2003/04/29 13:34
-	517	(static same fuel) and (lithium or potassium or magnesium or calcium or cesium or beryllium or strontium or barium)	USPAT; US-PGPUB	2003/04/29 14:12
-	34072	anti-static or antistatic	USPAT; US-PGPUB	2003/04/29 13:36
-	74	((static same fuel) and (lithium or potassium or magnesium or calcium or cesium or beryllium or strontium or barium)) and (anti-static or antistatic)	USPAT; US-PGPUB	2003/04/29 14:27
-	150	44/457.ccls.	USPAT; US-PGPUB	2003/04/29 14:11
-	3	(static same fuel) and 44/457.ccls.	USPAT; US-PGPUB	2003/04/29 14:11
-	43	44/457.ccls. and (lithium or potassium or magnesium or calcium or cesium or beryllium or strontium or barium)	USPAT; US-PGPUB	2003/04/29 14:27
-	2	(anti-static or antistatic) and (44/457.ccls. and (lithium or potassium or magnesium or calcium or cesium or beryllium or strontium or barium))	USPAT; US-PGPUB	2003/04/29 14:13
-	30826	anti-static or antistatic	EPO; JPO; DERWENT	2003/04/29 14:36
-	268	fuel and (anti-static or antistatic)	EPO; JPO; DERWENT	2003/04/29 14:27
-	9	(fuel and (anti-static or antistatic)) and (lithium or potassium or magnesium or calcium or cesium or beryllium or strontium or barium)	EPO; JPO; DERWENT	2003/04/29 14:28
-	314	(anti-static or antistatic) and (inorganic with salt)	EPO; JPO; DERWENT	2003/04/29 14:36
-	3	((anti-static or antistatic) and (inorganic with salt)) and fuel	EPO; JPO; DERWENT	2003/04/29 14:37

(FILE 'HOME' ENTERED AT 14:39:14 ON 29 APR 2003)

FILE 'CAPLUS' ENTERED AT 14:39:22 ON 29 APR 2003

L1 20285 S ANTISTATIC OR ANTI-STATIC
L2 289 S L1 AND (FUEL OR GASOLINE OR GASOLENE OR DIESEL OR KEROSENE OR
L3 104 S L2 AND (POTASSIUM OR MAGNESIUM OR CALCIUM OR CESIUM OR BERYLL

FILE 'STNGUIDE' ENTERED AT 14:41:58 ON 29 APR 2003

FILE 'CAPLUS' ENTERED AT 14:49:06 ON 29 APR 2003

L3 ANSWER 5 OF 104 CAPLUS COPYRIGHT 2003 ACS
AN 2002:611490 CAPLUS
DN 137:315459
TI Prevention of marine pollution due to electrostatic fields
AU Samoilescu, G.
CS Naval Academy "Mircea cel Batran", Constantsa, 8700, Rom.
SO Journal of Environmental Protection and Ecology (2002), 3(2), 469-473
CODEN: JEPECE; ISSN: 1311-5065
PB SciBulCom Ltd.
DT Journal
LA English
CC 61-2 (Water)
Section cross-reference(s): 51, 59
AB Electrostatic fields may cause fire and explosions on board ships. Beginning with the ship structure, which is elec. neutral, the probability of charge occurrence of this accumulation and electrostatic discharges during loading, transport, and unloading of **fuel** cargo, was analyzed. Both aspects of the electrostatic discharge in the cargo tank were considered: its surface (corona effect of low energy) and interior (as a spark). Theor. results, introduced into a computer program, were compared with exptl. data obtained in a lab. and on specialized ships. Based on these results, norms and recommendations were proposed for Romanian Lloyd to approve, and according to which the crews should be instructed.
ST seawater pollution prevention shipboard electrostatic field; petroleum loading unloading activity electrostatic charge accumulation shipboard; safety electrostatic charge accumulation explosion prevention petroleum tanker
IT Electric potential
(elec. ground; preventing marine pollution from explosions due to electrostatic fields accumulated from petroleum loading and unloading activities on board marine petroleum tankers)
IT Electric discharge
(electrostatic; preventing marine pollution from explosions due to electrostatic fields accumulated from petroleum loading and unloading activities on board marine petroleum tankers)
IT Petroleum, uses
RL: NUU (Other use, unclassified); USES (Uses)
(**fuel**; preventing marine pollution from explosions due to electrostatic fields accumulated from petroleum loading and unloading activities on board marine petroleum tankers)
IT Ships
(petroleum tanker; preventing marine pollution from explosions due to electrostatic fields accumulated from petroleum loading and unloading activities on board marine petroleum tankers)
IT Antistatic agents
Electrostatic charge
Explosion prevention
Safety
Seawater pollution
(preventing marine pollution from explosions due to electrostatic fields accumulated from petroleum loading and unloading activities on board marine petroleum tankers)
RE.CNT 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Ianoz, M; Lecons Ecole Polytechnique Federale de Lausanne 1992, P176
(2) Kramer, H; Journal of Electrostatics 1979, V6, P361
(3) Lewis, B; Combustion Flames and Explosion Gases 1961, P1
(4) Samoilescu, G; Contract de cercetare No 4596/1994
(5) Samoilescu, G; Ph D Summary, Technical University of Bucharest 1996, P1
(6) Samoilescu, G; Ph D Thesis, Technical University of Bucharest 1998, P68

(7) Samoilescu, G; The Electrostatic Field on Oil Carriers 2000, P125

L3 ANSWER 8 OF 104 CAPLUS COPYRIGHT 2003 ACS
AN 2001:795146 CAPLUS
DN 135:346701
TI **Anti-static additive compositions for hydrocarbon fuels**

IN Schield, John A.
PA Baker Hughes Inc., USA
SO PCT Int. Appl., 21 pp.
CODEN: PIXXD2

DT Patent
LA English

ICI C10

CC 51-7 (Fossil Fuels, Derivatives, and Related Products)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2001081512	A2	20011101	WO 2001-US12892	20010420
	WO 2001081512	A3	20020530		
	WO 2001081512	C1	20030103		
	W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM			
	RW:	GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG			
	US 2001048099	A1	20011206	US 2001-836071	20010416
	US 6391070	B2	20020521		
	AU 2001055534	A5	20011107	AU 2001-55534	20010420
	EP 1274819	A2	20030115	EP 2001-928703	20010420
	R:	AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR			

PRAI US 2000-199075P P 20000420
US 2001-836071 A 20010416
WO 2001-US12892 W 20010420

AB It was discovered that less expensive, and in some cases synergistically effective **anti-static** additive blends may be added to hydrocarbon **fuels** to improve the cond. thereof. The blend includes an **anti-static** amt. of at least one hydrocarbon sol. copolymer of an alkylvinyl monomer and a cationic vinyl monomer and an **anti-static** amt. of at least one hydrocarbon sol. polysulfone copolymer of at least one olefin and sulfur dioxide. Optional ingredients include polymeric polyamines and aryl sulfonic acids.

ST antistatic additive hydrocarbon **fuel**

IT Diesel fuel
(**anti-static** additive compns. for hydrocarbon **fuels**)

IT Polyamines

Polysulfones, uses

RL: MOA (Modifier or additive use); USES (Uses)
(**anti-static** additive compns. for hydrocarbon **fuels**)

IT Kerosene

RL: TEM (Technical or engineered material use); USES (Uses)
(**anti-static** additive compns. for hydrocarbon **fuels**)

IT Fuel additives

(anti-static; anti-static
 additive compns. for hydrocarbon fuels)
 IT Sulfonic acids, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (arenesulfonic; anti-static additive compns. for
 hydrocarbon fuels)
 IT Solvents
 (arom.; anti-static additive compns. for
 hydrocarbon fuels)
 IT 67-63-0, Isopropyl alcohol, uses 1330-20-7, Xylene, uses 27176-87-0,
 Dodecyl benzenesulfonic acid 371237-50-2, Tetramine T
 RL: MOA (Modifier or additive use); USES (Uses)
 (anti-static additive compns. for hydrocarbon
 fuels)

L3 ANSWER 10 OF 104 CAPLUS COPYRIGHT 2003 ACS
 AN 2001:672856 CAPLUS
 DN 136:357249
 TI Additive formulation combining lubricity and conductivity
 AU Anon.
 CS UK
 SO Research Disclosure (2001), 449(Sept.), P1501 (No. 449051)
 CODEN: RSDSBB; ISSN: 0374-4353
 PB Kenneth Mason Publications Ltd.
 DT Journal; Patent
 LA English
 CC 51-9 (Fossil Fuels, Derivatives, and Related Products)
 PATENT NO. KIND DATE APPLICATION NO. DATE
 ----- ----- ----- -----
 PI RD 449051 20010910
 PRAI RD 2001-449051 20010910
 AB The lubricity and elec. cond. of middle distillate fuels (e.g.,
 automotive diesel fuel, domestic heating oil,
 industrial gas oil, etc.) can be improved by using lubricity and
 anti-static additives. Anti-static
 additives are materials that improve the elec. cond. of a fuel.
 Examples of com. anti-static additives are Stadis 450,
 Petrolite T511, Petrolite T3511, Hitec 4199, and ASA-3. The lubricity and
 elec. cond. can be improved by sep. addn. of the lubricity
 improver and anti-static additives. In some
 circumstances it is more convenient to prep. a mixt. of the lubricity
 improver with the anti-static additive and add the
 mixt. to the fuel as a single additive.
 ST antistatic lubricating elec cond additive
 IT Diesel fuel
 Diesel fuel additives
 Electric conductivity
 Lubrication
 Pour-point depressants
 (anti-static lubricity additives for diesel
 fuels)

L3 ANSWER 13 OF 104 CAPLUS COPYRIGHT 2003 ACS
 AN 2001:205838 CAPLUS
 DN 134:283059
 TI Conductivity and charging tendency of JP-8 + 100 jet fuel
 AU Leonard, Joseph T.; Hardy, Dennis R.
 CS Geo-Centers, Inc., Fort Washington, MD, 20749, USA
 SO Proceedings of the International Conference on Stability and Handling of
 Liquid Fuels, 7th, Graz, Austria, Sept. 24-29, 2000 (2001), Meeting Date
 2000, Volume 2, 591-631. Editor(s): Giles, Harry N. Publisher: U. S. Dep.
 of Energy, Washington, D. C.

CODEN: 69AZOO
DT Conference
LA English
CC 51-9 (Fossil Fuels, Derivatives, and Related Products)
Section cross-reference(s): 76
AB The effect of the Betz Thermal Stability Additive, 8Q492, and the Octel Static Dissipater Additive, Stadis 450, on the elec. cond. and electrostatic charging tendency of Jet A **fuels** was examd. **Fuel** cond. was measured using the Emcee Precision Cond. Meter and charging tendency using the EXXON Mini-Static Tester. A variety of filter media were used to assess charging tendency including the Type 10 ref. filter paper and filter media from **fuel** coalescers, separators, monitors and reticulated foam. **Fuels** were found to very widely in their response to Stadis 450. At a concn. of 1 ppm, Stadis 450 increased the cond. of Jet A **fuels**, on av., 138 pS/m. If the **fuel** also contained the Betz additive, the av. cond. increase was 252 pS/m. It was found that the Betz additive, at a concn. of 256 mg/I, increased the cond. of most **fuels** to above 100 pS/m and of 15% of the **fuels** above 150 pS/m which is the lower specification limit for JP-8 **fuels**. The Betz additive increased the charging tendency to very high levels on only two media, namely, the Type 10 ref. filter and a coalescer medium. Charging on all other media including both the non-conductive and conductive reticulated foams was quite low. **Fuels** contg. Stadis 450 exhibited high charging on most coalescer media, particularly fiberglass and felt, and on the media paper and superabsorbent and absorbent media of the monitor cartridge. They also gave high charging on both the conductive and non-conductive foams, but not on the separator media or on the Type 10 ref. filter. It should be emphasized that all of the filter media tested were designed for use with the Betz additive and may or may not be representative of the media being used with **fuels** contg. Stadis 450 today.
ST jet **fuel** thermal stabilizer electrostatic charge; elec cond jet **fuel** additive
IT Heat stabilizers
(Betz thermal stability additive, 8Q492; cond. and charging tendency of JP-8 + 100 jet **fuel**)
IT Antistatic agents
(Octel static dissipater additive, Stadis 450; cond. and charging tendency of JP-8 + 100 jet **fuel**)
IT Electric conductivity
Electrostatic charge
Filters
Filtration
Jet aircraft **fuel**
(cond. and charging tendency of JP-8 + 100 jet **fuel**)
IT 73247-29-7, Stadis 450
RL: MOA (Modifier or additive use); USES (Uses)
(cond. and charging tendency of JP-8 + 100 jet **fuel**)
RE.CNT 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) American Society for Testing and Materials; ASTM Designation D1655-96C
(2) American Society for Testing and Materials; Standard Test Method for Electrical Conductivity of Liquid Hydrocarbons by Precision Meter 1995, D4308-95
(3) Anon; Military Specification MIL-B-83054A (USAF) 1973
(4) Anon; Military Specification: Turbine Fuel, Aviation, Kerosene Types, NATO F-34 (JP-8) and NATO F-45 1995, MIL-T-83133D
(5) Anon; Performance Specification MIL-PRP-87260A (USASF) 1992
(6) Coordinating Research Council; CRC Report 1975, V478
(7) Leonard, J; Naval Research Laboratory Report 1969, V6952
(8) Leonard, J; Naval Research Laboratory Report 1969, V6953

- (9) Leonard, J; Naval Research Laboratory Report 1976, V8021
 (10) Leonard, J; Naval Research Laboratory Report 1978, V8204
 (11) Matulevicius, E; Mini-Static Test Procedure 1989

L3 ANSWER 14 OF 104 CAPLUS COPYRIGHT 2003 ACS
 AN 2001:97086 CAPLUS
 DN 134:118248
 TI Slow-burning **antistatic** carbonaceous material
 IN Lisiewska, Zofia
 PA Glowny Instytut Gornictwa, Pol.
 SO Pol., 5 pp.
 CODEN: POXXA7
 DT Patent
 LA Polish
 IC ICM C10L009-02
 ICS C01B031-02
 CC 51-17 (Fossil Fuels, Derivatives, and Related Products)
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	PL 176868	B1	19990831	PL 1994-303745	19940609
PRAI	PL 1994-303745		19940609		
AB	Prodн. of slow-burning antistatic solid fossil fuels (esp. peat, coal, brown coal, anthracite) involves stabilization of an org. phase by homogenization during an intensive mixing first in the presence of thermal stabilizers (e.g., polyorganoborophosphates) and then agents (e.g., reaction products of polyorganoborophosphates and H ₃ PO ₄ and/or polyphosphoric acid) which decrease combustibility of the carbonaceous material at a wt. ratio of (1-10):(1-10).				
ST	slow burning antistatic fuel ; peat slow burning antistatic ; coal slow burning antistatic ; brown coal slow burning antistatic ; anthracite slow burning antistatic				
IT	Peat (prodн. of slow-burning antistatic)				
IT	Anthracite Brown coal Coal, preparation Coal dust RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PREP (Preparation); PROC (Process) (prodн. of slow-burning antistatic)				
IT	Aminoplasts RL: TEM (Technical or engineered material use); USES (Uses) (reaction product with phosphoric acid, borax, urea, and/or hexamethylentetramine; thermal stabilizer in prodн. of slow-burning antistatic fossil fuels)				
IT	57-13-6D, Urea, reaction product with phosphoric acid, borax, hexamethylentetramine, and/or urea-formaldehyde resin, uses 100-97-0D, reaction product with phosphoric acid, borax, urea, and/or urea-formaldehyde resin 1303-96-4D, Borax, reaction product with phosphoric acid, urea, hexamethylentetramine, and/or urea-formaldehyde resin 1309-42-8D, Magnesium hydroxide, reaction product with phosphoric acid, borax, and urea-formaldehyde resin 7664-38-2D, Phosphoric acid, reaction product with borax, urea, hexamethylentetramine, and/or urea-formaldehyde resin, uses 9011-05-6D, Urea-formaldehyde copolymer, reaction product with phosphoric acid, borax, urea, and/or hexamethylentetramine 13717-00-5D, Magnesite, reaction product with phosphoric acid, borax, urea, and hexamethylentetramine 16389-88-1D, Dolomite, reaction product with phosphoric acid, borax, and urea-formaldehyde resin RL: TEM (Technical or engineered material use); USES (Uses)				

(thermal stabilizer in prodn. of slow-burning **antistatic**
fossil fuels)

L3 ANSWER 18 OF 104 CAPLUS COPYRIGHT 2003 ACS
AN 2000:45698 CAPLUS
DN 132:66503
TI Preparation of **diesel** oil additive
IN Li, Zhiming
PA Peop. Rep. China
SO Faming Zhuanli Shengqing Gongkai Shuomingshu, 7 pp.
CODEN: CNXXEV
DT Patent
LA Chinese
IC ICM C10L001-22
ICS C10L010-00
CC 51-9 (Fossil Fuels, Derivatives, and Related Products)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	---	-----	-----	-----
PI	CN 1165851	A	19971126	CN 1996-105224	19960521
PRAI	CN 1996-105224		19960521		

AB The additive is prep'd. from surfactant 21-29, TEc penetrating agent and/or SN **antistatic** agent 21-29, catalyst 0.6- 1.2, cotton seed oil 0.03-0.3, urea (or NH₄HCO₃, or KNO₃) 0.2-5, and emulsifier 36-64 wt. parts. The surfactant is selected from FM emulsifier, tween 80, tween 60, nonyl phenol polyoxyethylene ether, and polyethylene glycol alkylphenyl ether. The emulsifier is selected from penetrating agent T, THF, and a mixed soln. of coconic acid and EtOH ethylamine at a wt. ratio of 1:1. The catalyst is prep'd. by mixing Ni acetylacetone and Fe dust at (8-10):1 for .gt;req.4 days.

ST **diesel** oil additive surfactant emulsifier catalyst

IT **Antistatic** agents

Catalysts

Diesel fuel

 Emulsifying agents

 Fuel additives

 Penetrating agents

 Surfactants

 (prepn. of **diesel** oil additive)

IT Cottonseed oil

RL: MOA (Modifier or additive use); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(prepn. of **diesel** oil additive)

IT 57-13-6, Urea, uses 109-99-9, THF, uses 141-43-5, Ethanol amine, uses 1066-33-7, Ammonium bicarbonate 3264-82-2, Nickel acetylacetone 7439-89-6, Iron, uses 7757-79-1, **Potassium** nitrate, uses 9005-65-6, Tween 80 9005-67-8, Tween 60 9016-45-9, Polyethylene glycol nonylphenyl ether
RL: MOA (Modifier or additive use); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(prepn. of **diesel** oil additive)

L3 ANSWER 20 OF 104 CAPLUS COPYRIGHT 2003 ACS

AN 1999:573921 CAPLUS

DN 131:172530

TI Water-based **diesel** fuel additives

IN Wang, Xing; Jin, Jingnan

PA Peop. Rep. China

SO Faming Zhuanli Shengqing Gongkai Shuomingshu, 4 pp.

CODEN: CNXXEV

DT Patent

LA Chinese

IC ICM C10L001-24
 CC 51-9 (Fossil Fuels, Derivatives, and Related Products)
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	CN 1128286	A	19960807	CN 1995-101011	19950104
PRAI	CN 1995-101011		19950104		
AB	The diesel additive consists of catalyst (Span 80, or Tween 80) 83.6-86.4, antioxidant (di-tert-butylphenol, or 2-naphthylamine), antiwear additive (alkyl xanthate) 1.8-2.2, detergent (barium alkynaphthalenesulfonate) 1.8-2.2, anticicing agent (glycol monomethyl ether) 1.8-2.2, antistatic agent 1.8-2.2, f.p. depressant (alkyl naphthalene) 1.8-2.2, and combustion improver (petroleum sulfonate) 2.8-3.2 wt.%.				
ST	water based diesel fuel additive				
IT	Sulfonates				
	RL: MOA (Modifier or additive use); USES (Uses) (combustion improvers; water-based diesel fuel additives contg.)				
IT	Diesel fuel additives (water-based diesel fuel additives)				
IT	109-86-4, Glycol monomethyl ether				
	RL: MOA (Modifier or additive use); USES (Uses) (anticicing agent; water-based diesel fuel additives contg.)				
IT	91-59-8, 2-Naphthylamine 26746-38-3, Di-tert-butylphenol				
	RL: MOA (Modifier or additive use); USES (Uses) (antioxidant; water-based diesel fuel additives contg.)				
IT	15907-14-9, Chromium stearate				
	RL: MOA (Modifier or additive use); USES (Uses) (<u>antistatic</u> agent; water-based diesel fuel additives contg.)				
IT	4741-30-4D, Carbonodithioic acid, alkyl derivs., esters				
	RL: MOA (Modifier or additive use); USES (Uses) (antiwear agents; water-based diesel fuel additives contg.)				
IT	1338-43-8, Span-80 9005-65-6, Tween-80				
	RL: CAT (Catalyst use); USES (Uses) (catalyst; water-based diesel fuel additives contg.)				
IT	25155-19-5D, Naphthalenesulfonic acid, alkyl derivs., barium salts				
	RL: MOA (Modifier or additive use); USES (Uses) (detergents; water-based diesel fuel additives contg.)				
IT	91-20-3D, Naphthalene, alkyl derivs., uses				
	RL: MOA (Modifier or additive use); USES (Uses) (f.p. depressants; water-based diesel fuel additives contg.)				

L3 ANSWER 29 OF 104 CAPLUS COPYRIGHT 2003 ACS
 AN 1997:138366 CAPLUS
 DN 126:228914
 TI Effects of **fuel** components on the performance of conductivity improvers in hydrocarbons
 AU Dacre, B.; Abi Aoun, W. G.
 CS Royal Military College of Science, Cranfield University, Shrivenham, Swindon, Wilts, UK
 SO Journal of Electrostatics (1997), 39(2), 89-110
 CODEN: JOELDH; ISSN: 0304-3886
 PB Elsevier

DT Journal
LA English
CC 59-5 (Air Pollution and Industrial Hygiene)
Section cross-reference(s): 51

AB The aims of this work were (a) to investigate the way in which **fuel** additives and naturally occurring **fuel** components affect the performance of the cond. improvers and (b) to understand the nature of the intermol. interactions involved. Solns. have been studied by measuring the elec. cond. of solns. of cond. improvers chiefly in the pure alkanes, heptane and dodecane. The parameters studied were (a) the cond. response to addns. of other additives or compds. of similar structure (these include antioxidant, icing inhibitor and corrosion inhibitor) and (b) the cond. response to addns. of compd. types similar to those which are naturally occurring (these include aroms., organo-nitrogen, sulfur and oxygen compds.). Interpretation of data has to take into account adsorption processes occurring in the measuring cells. The results demonstrate that strong proton donor-acceptor interactions correlate with antagonistic effects on the performance of the cond. improver. Such effects may **be** important at extremely low concns. of strong proton donor mols.

ST safety hydrocarbon **fuel** storage cond improver

IT **Fuel** additives
(cond. improvers; effects of **fuel** components on performance of cond. improvers in hydrocarbons)

IT Electrostatic charge
(control of; effects of **fuel** components on performance of cond. improvers in hydrocarbons)

IT Electric conductivity
Fuels
Safety
Storage
(effects of **fuel** components on performance of cond. improvers in hydrocarbons)

IT Naphthenic acids, processes
RL: PEP (Physical, engineering or chemical process); PRP (Properties);
PROC (Process)
(effects of **fuel** components on performance of cond. improvers in hydrocarbons)

IT Explosion
Fire
(hazard of, prevention of; effects of **fuel** components on performance of cond. improvers in hydrocarbons)

IT Pumping
(high-speed, safety in; effects of **fuel** components on performance of cond. improvers in hydrocarbons)

IT Filtration
(safety in; effects of **fuel** components on performance of cond. improvers in hydrocarbons)

IT 51004-63-8, ASA 3 (antistatic agent) 73247-29-7, Stadis 450
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(effects of **fuel** components on performance of cond. improvers in hydrocarbons)

IT 57-11-4, Octadecanoic acid, processes 85-01-8, Phenanthrene, processes 91-20-3, Naphthalene, processes 95-15-8, Benzo[b]thiophene 108-39-4, processes 108-88-3, processes 109-86-4 120-72-9, 1H-Indole, processes 140-66-9 2627-35-2 6144-28-1 7057-92-3 7664-38-2D, Phosphoric acid, alkylaryl esters 25155-30-0, Sodium dodecylbenzene sulfonate 27176-87-0 56748-37-9, Hitec E 515 128664-96-0, Hitec E 580 188364-50-3, Ionol K 65 188364-54-7, Lubrizol 541
RL: PEP (Physical, engineering or chemical process); PRP (Properties);
PROC (Process)

(effects of **fuel** components on performance of cond. improvers
in hydrocarbons)

L3 ANSWER 31 OF 104 CAPLUS COPYRIGHT 2003 ACS
AN 1996:457883 CAPLUS
DN 125:91084
TI Production of jet engine **fuel**
IN Siembab, Edward; Stanik, Winicjusz; Jaskola, Konrad; Mierzejewski,
Mieczyslaw; Stoklosa, Tadeusz; Zieleniewski, Wojciech; Sadlowski, Marek;
Bieniek, Zbigniew; Czarny, Jan; et al.
PA Instytut Technologii Nafty im Prof Stanislawa Pilata, Pol.; Mazowieckie
Zaklady Rafineryjne i Petrochemiczne
SO Pol., 3 pp.
CODEN: POXXA7
DT Patent
LA Polish
IC ICM C10L001-14
CC 51-9 (Fossil Fuels, Derivatives, and Related Products)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	---	-----	-----	-----
PI	PL 166514	B1	19950531	PL 1992-295751	19920826
PRAI	PL 1992-295751		19920826		

AB Jet **fuel** is produced from a petroleum fraction b.
150-280.degree. (preferably b. 155-240.degree.) by hydrorefining on a
Co-Mo/Al₂O₃, Co-Ni/Al₂O₃, or Ni-Mo/Al₂O₃ catalyst at 220-260.degree.
(preferably 240-250.degree.), 2.0-5.0 MPa (preferably 2.3-4.5 MPa), and
40-150 vol H₂/vol. feed. The raffinate is modified by addn. of a
butylphenol antioxidant 17-24 mg/L, **antistatic**
additive .ltoreq.3 mg/L, and a fatty acid mixt. as an antiwear
additive. The resulting **fuel** contains <10 mg
mercaptans (as S)/kg.

ST jet engine **fuel** manuf
IT **Fuels**, jet aircraft
RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical
process); PREP (Preparation); PROC (Process)
(manuf. by hydrorefining)
IT Petroleum refining catalysts
RL: CAT (Catalyst use); USES (Uses)
(hydrorefining, for jet **fuel** manuf.)
IT Petroleum refining
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(hydrorefining, for jet **fuel** manuf.)
IT 1344-28-1, Alumina, uses 7439-98-7, Molybdenum, uses 7440-02-0,
Nickel, uses 7440-48-4, Cobalt, uses
RL: CAT (Catalyst use); USES (Uses)
(in hydrorefining catalyst for jet **fuel** manuf.)

L3 ANSWER 44 OF 104 CAPLUS COPYRIGHT 2003 ACS
AN 1986:36518 CAPLUS
DN 104:36518
TI Electroconductive properties of **antistatic** additives
AU Kuvshinov, V. I.; Altunina, L. K.; Genkina, L. F.
CS USSR
SO Ekspl. Svoistva Topl. Masel Metody Ikh Issled. (1984), 151-4. Editor(s):
Bol'shakov, G. F.; Beiko, O. A. Publisher: Akad. Nauk SSSR, Sib. Otd.,
Tomsk. Fil., Tomsk, USSR.
CODEN: 54UKAJ
DT Conference
LA Russian
CC 51-7 (Fossil Fuels, Derivatives, and Related Products)
AB The **antistatic fuel** additive ASA 3 [51004-63-8] forms

a monomol. layer on metals. This was detd. by measuring the elec. potential of Hg electrode in heptane contg. dissolved ASA 3 vs. the soln. concn. and also the contact angle between Hg electrode at 0.6- 1.2 V and ASA 3-heptane solns.

ST **antistatic fuel** additive monolayer metal
IT **Antistatic agents**
 (chromium alkylsalicylate-**calcium** didecyl sulfosuccinate-methylvinylpyridine-poly(alkyl methacrylate) reaction products, for liq. **fuels**, elec. potential and contact angle of, on metals)
IT Metals, properties
 RL: PRP (Properties)
 (monolayers of **antistatic fuel** additives on)
IT Adsorption
 (of **antistatic fuel** additives on metals)
IT Contact angle
 (of metals with **fuels** contg. **antistatic agents**)
IT **Gasoline** additives
 (**antistatic**, elec. potential and contact angle of, on metals)
IT **Fuels**
 (liq., contg. **antistatic** agents, elec. potential and contact angle of, on metals)
IT 51004-63-8
 RL: USES (Uses)
 (**antistatic** liq.-**fuel** additive, elec. potential and contact angle of, on metals)
IT 69-72-7D, alkyl derivs., chromium salts 79-41-4D, alkyl esters, polymers, reaction products with methylvinylpyridine 16659-50-0 25638-00-0D, reaction products with poly(alkyl methacrylate)
 RL: USES (Uses)
 (**antistatic** liq.-**fuel** additives contg., elec. potential and contact angle of, on metals)

L3 ANSWER 46 OF 104 CAPLUS COPYRIGHT 2003 ACS
AN 1985:580597 CAPLUS
DN 103:180597
TI Chromium salts of natural naphthenic acids as **antistatic** additives for jet **fuels** and drilling fluids
AU Mardanov, M. A.; Veliev, K. G.; Abbasov, V. M.; Nabibekova, Kh. A.
CS USSR
SO Sbornik Trudov - Akademiya Nauk Azerbaidzhanskoi SSR, Institut Neftekhimicheskikh Protsessov im. Yu. G. Mamedalieva (1984), 14, 128-32
CODEN: SNPAAQ; ISSN: 0400-9525
DT Journal
LA Russian
CC 51-9 (Fossil Fuels, Derivatives, and Related Products)
AB Cr salts of natural petroleum naphthenic acids are more effective **antistatics** for liq. hydrocarbons than Mn, Na, or **Ca** salts or com. **antistatics** Sigbol and Akor.
ST hydrocarbon **antistatic** chromium naphthenate; drilling fluid **antistatic** chromium; jet fuel **antistatic** chromium
IT Drilling fluids and muds
 Fuels, jet aircraft
 (**antistatic** agents for, chromium naphthenates as)
IT **Antistatic** agents
 (chromium salts of natural petroleum naphthenic acids, for hydrocarbon liqs.)
IT Naphthenic acids, compounds
 RL: USES (Uses)
 (chromium salts, as **antistatic** agents, for hydrocarbon liqs.)
IT **Gasoline** additives

(**antistatic**, chromium salts of natural petroleum naphthenic acids)

IT 7440-47-3D, salts with naphthenic acids
RL: USES (Uses)
(**antistatic** agents, for hydrocarbon liqs.)

L3 ANSWER 50 OF 104 CAPLUS COPYRIGHT 2003 ACS
AN 1983:507924 CAPLUS
DN 99:107924

TI **Antistatic** additive for **gasolines**
IN Alexandru, Constantin; Aurescu, Teodor; Andries, Ioan
PA Intreprinderea pentru Conditionarea si Livrarea Produselor Chimice si Petroliere "Chimpex", Constanta, Rom.
SO Rom., 3 pp.
CODEN: RUXXA3
DT Patent
LA Romanian
IC C09K003-16
CC 51-7 (Fossil Fuels, Derivatives, and Related Products)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	RO 79870	B	19821011	RO 1980-100256	19800221
PRAI	RO 1980-100256		19800221		

AB An **antistatic gasoline** additive consisting of a 1:1:1:1:1 mixt. of Co naphthenate, Mn naphthenate, Pb naphthenate, alkenylsuccinimide (C10-20), and **Ca** alkanesulfonate (C10-20) increases the sp. cond. of **gasoline** from 0.001 .times. 10-11 to 11,900 .times. 10-11 .OMEGA.-1-cm-1 when present at concns. of 0.6 g/L.

ST **antistatic** naphthenate **gasoline**; succinimide
antistatic gasoline; sulfonate **antistatic gasoline**

IT Naphthenic acids, compounds
RL: USES (Uses)
(cobalt and lead and manganese salts, **antistatic** agents contg., for **gasoline**)

IT Naphthenic acids, compounds
RL: USES (Uses)
(cobalt and lead, **antistatic** agents contg., for **gasoline**)

IT Sulfonic acids, compounds
RL: USES (Uses)
(alkane, **calcium** salts, **antistatic** agents contg., for **gasoline**)

IT **Gasoline** additives
(**antistatic**, alkenylsuccinimides-**calcium** alkane sulfonates-transition metal naphthenates, properties of)

IT 123-56-8D, alkenyl derivs. 7439-92-1D, salts with naphthenic acids 7439-96-5D, salts with naphthenic acids 7440-48-4D, salts with naphthenic acids
RL: USES (Uses)
(**antistatic** agents contg., for **gasoline**)

L3 ANSWER 52 OF 104 CAPLUS COPYRIGHT 2003 ACS
AN 1983:37465 CAPLUS
DN 98:37465

TI **Antistatic** compositions
IN Knepper, J. Irvine; Sallee, Dennis C.
PA Petrolite Corp. , USA
SO U.S., 8 pp.
CODEN: USXXAM
DT Patent

LA English
 IC C10L001-22
 NCL 044062000
 CC 51-9 (Fossil Fuels, Derivatives, and Related Products)
 Section cross-reference(s): 46
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 4356002	A	19821026	US 1978-968327	19781211
	US 4515603	A	19850507	US 1982-418111	19820914
PRAI	US 1978-968327		19781211		
AB	Surfactants (i.e., demulsifiers in petroleum emulsion-breaking) can be used as antistatic agents in fuel oils, kerosines , and diesel and jet aircraft fuels by increasing the cond. of the fuels . Suitable surfactants are oxyalkylated alkylphenol-formaldehyde resins and amide-salts of 1-tetradecene-maleic anhydride copolymer. These surfactants also synergistically enhance the effects of each other and of com. antistatic agents (e.g., 1-decene-SO ₂ copolymer-Polyflo 130 mixt.).				
ST	antistatic additive fuel ; phenolic resin antistatic additive fuel ; demulsifier petroleum antistatic additive fuel				
IT	Phenolic resins, uses and miscellaneous Polysulfones RL: USES (Uses) (antistatic additives for fuels)				
IT	Fuels, diesel Fuels , jet aircraft Kerosine RL: USES (Uses) (antistatic additives for, petroleum demulsifiers as)				
IT	Surfactants (demulsifiers, antistatic additives for fuels)				
IT	Fuel oil additives (antistatic , petroleum demulsifiers as)				
IT	Petroleum refining (emulsion breaking, demulsifiers for, as antistatic additives for fuels)				
IT	112-92-5D, reaction products with 1-tetradecene-maleic anhydride copolymer and 3-N-cyclohexyl-2-methyl-2-aminobutane 26544-24-1D, reaction products with 1-tetradecene-maleic anhydride copolymer 33990-98-6 39335-54-1 55845-06-2 64130-91-2 68133-21-1 68140-83-0 84083-88-5 84083-89-6 84083-90-9 84083-91-0 84083-92-1 84083-93-2 84101-14-4D, reaction products with tert-dodecylamine or stearyl alc. and 3-N-cyclohexyl-2-methyl-2-aminobutane 84230-49-9D, reaction products with stearyl alc. and maleic anhydride-1-tetradecene copolymer RL: USES (Uses) (antistatic additives for fuels)				
L3	ANSWER 60 OF 104 CAPLUS COPYRIGHT 2003 ACS				
AN	1980:516748 CAPLUS				
DN	93:116748				
TI	Use of an antistatic additive in aviation fuels and other products				
AU	Strawson, H.				
CS	Thornton Res. Cent., Shell Res. Ltd., Chester, CH1 3SH, UK				
SO	Strucna Izdanja Jugoslavenskog Drustva za Primjenu Goriva i Maziva (1977), 50, 13 pp.				
	CODEN: SIJMDY				
DT	Journal; General Review				
LA	Serbo-Croatian				

CC 51-0 (Fossil Fuels, Derivatives, and Related Products)
Section cross-reference(s): 37

AB A review with 20 refs. on experience gained in the use of the **antistatic** agent ASA-3 [51004-63-8] (a mixt. contg. Cr alkylsalicylate, Ca didecylsulfosuccinate [16659-50-0], and alkyl methacrylate-methylvinylpyridine copolymer) as an additive in the loading of road and rail truck vehicles with petroleum products, in aircraft fueling and fueling systems, and in aviation **fuels**.

ST ASA 3 **antistatic** agent review; aviation **fuel**
antistatic additive review; petroleum product **antistatic** additive review; chromium alkylsalicylate mixt **antistatic** review; **calcium** didecylsulfosuccinate mixt **antistatic** review; methacrylate copolymer mixt **antistatic** review; methylvinylpyridine copolymer mixt **antistatic** review

IT Petroleum products
(**antistatic** additives for)

IT **Fuels**
(aviation, **antistatic** additives for)

IT 69-72-7D, alkyl derivs., chromium salts, mixt. with **calcium** didecylsulfosuccinate and alkyl methacrylate-methylvinylpyridine copolymer 79-41-4D, alkyl esters, polymers with methylvinylpyridine, mixt. with **calcium** didecylsulfosuccinate and chromium alkylsalicylate 16659-50-0D, mixt. contg. chromium alkylsalicylate and alkylmethacrylate-methylvinylpyridine copolymer 25638-00-0D, polymers with alkyl methacrylate, mixt. with **calcium** didecylsulfosuccinate and chromium alkylsalicylate
RL: USES (Uses)
(**antistatic** additive, for aviation **fuels** and petroleum products)

IT 51004-63-8
RL: USES (Uses)
(use of, in aviation **fuels** and petroleum products)

L3 ANSWER 61 OF 104 CAPLUS COPYRIGHT 2003 ACS
AN 1979:441677 CAPLUS
DN 91:41677
TI Three-component **antistatic** additive to **fuels** based on chromium alkylsalicylates
AU Pivtorak, R. M.; Novikova, V. F.
CS USSR
SO Khimicheskaya Tekhnologiya (Kiev) (1979), (2), 30-2
CODEN: KHMTA6; ISSN: 0368-556X
DT Journal
LA Russian
CC 51-9 (Fossil Fuels, Derivatives, and Related Products)
Section cross-reference(s): 37

AB The title additive, which increases the elec. cond. of petroleum **fuels**, was obtained by blending a mixt. of Cr mono- and dialkylsalicylates, Ca didecylsulfosuccinate [16659-50-0], and polar polymer stabilizer. The elec. resistance of jet **fuel** T 1 was decreased from 120 .times. 10⁹ to 5.10⁹ .OMEGA.-m by addn. of 2 .times. 10⁻⁴ wt.% of the synergistic additive mixt.

ST jet **fuel** **antistatic** additive; chromium alkylsalicylate **antistatic** additive **fuel**; **calcium** sulfosuccinate **antistatic** additive **fuel**

IT **Fuels**, jet aircraft
(**antistatic** additives for, synergistic mixt. of chromium alkylsalicylates and **calcium** didecylsulfosuccinate and polymer as)

IT Polymers, uses and miscellaneous
RL: USES (Uses)
(**antistatic** additives from synergistic mixt. of

calcium didecylsulfosuccinate and chromium alkylsalicylates
and, for jet **fuels**)

IT Electric conductivity and conduction
(of jet **fuels**, increase of, by synergistic mixt. of chromium
alkylsalicylate and **calcium** didecylsulfosuccinate and
polymer)

IT 69-72-7D, alkyl derivs., chromium salts 16659-50-0
RL: USES (Uses)
(**antistatic** additives contg., synergism of, for jet
fuels)

L3 ANSWER 64 OF 104 CAPLUS COPYRIGHT 2003 ACS
AN 1978:549109 CAPLUS
DN 89:149109

TI Electrical conductivity measurements on liquids of low dielectric constant
containing an **antistatic** additive

AU Van Os, N.; Vos, B.; Strawson, H.
CS K./Shell-Lab., Amsterdam, Neth.

SO Congr. Int. Electrost., [C. R.], 3rd (1977), Paper No. 14, 6 pp.
Publisher: Soc. Chim. Ind., Paris, Fr.
CODEN: 38UPA6

DT Conference
LA English
CC 51-9 (Fossil Fuels, Derivatives, and Related Products)
Section cross-reference(s): 76

AB The title cond. measurements were carried out to verify a theory of ionic
dissocn. of **antistatic** additives, and include field experience
with solns. contg. ASA 3 [51004-63-8]. The cond. contributed by
components of ASA 3 other than Cr alkylsalicylate is low; the synergism of
the ASA 3 mixt. is ascribable to increased ionic dissocn. caused by
specific interaction between Cr alkylsalicylate and another component,
Ca didecyl sulfosuccinate [16659-50-0]. Theconds., dynamic
viscosities, and relative dielec. consts. of several C5-C16 n-alkanes and
theconds. of ASA 3 solns. in these solvents are given. Calcns. showing
the ion size of the charge carriers involved in **antistatic**
activity to be .apprx.6 nm confirm that pairs of charge carriers
can be present in hydrocarbon solvents; this observation
explains the incomplete dissocn. phenomena exptl. shown for Cr
alkylsalicylate and ASA 3, for which the concns. of pos. charged carriers
are .apprx.0.1% and .apprx.1%, resp., of the concns. of added solute.

ST jet fuel **antistatic** additive; static dissipator
aviation fuel; elec cond **antistatic** fuel;
safety **antistatic** aviation fuel; jet aircraft
fuel antistatic; synergism **antistatic** agent
fuel; ion size static dissipator; charge carrier
antistatic agent; ionic dissocn static dissipator; chromium
salicylate static dissipator; **calcium** sulfosuccinate static
dissipator

IT Ions in liquids
(**antistatic** activity in relation to, of aircraft-**fuel**
additives)

IT **Fuels**, jet aircraft
(elec. cond. of, activity of **antistatic** agents in relation
to)

IT **Antistatic** agents
(for jet **fuels**, elec. cond. and synergism in activity of)

IT Explosion
(hazard of, in fueling of aircraft, activity of static dissipators in
relation to)

IT Ion pairs
(in solns. of **antistatic** agents in alkanes, elec. cond. in
relation to)

IT Electric conductivity and conduction
(of aircraft **fuels** contg. **antistatic** agents)

IT Walden products
(of n-alkanes contg. **antistatic** agents)

IT Alkanes, properties
RL: PRP (Properties)
(n-, elec. cond. and Walden products of, activity of **antistatic** agents for jet **fuel** in relation to)

IT 69-72-7D, alkyl derivs., chromium salts, mixts. with **calcium** didecyl sulfosuccinate and methacrylate-methylvinylpyridine copolymers
79-41-4D, derivs., polymers with methylvinylpyridine, mixts. with **calcium** didecyl sulfosuccinate and chromium alkylsalicylates
16659-50-0D, mixts. with chromium alkylsalicylate and methacrylate-methylvinylpyridine copolymers 25638-00-0D, polymers with methacrylates, mixts. with **calcium** didecyl sulfosuccinate and chromium alkylsalicylate 51004-63-8
RL: USES (Uses)
(**antistatic** agents, for aircraft **fuels**, synergism in activity of)

IT 109-66-0, properties 110-54-3, properties 111-65-9, properties 112-40-3 124-18-5 142-82-5, properties 544-76-3
RL: PRP (Properties)
(dielec. const. and Walden products of, **antistatic** activity of additives in relation to)

L3 ANSWER 68 OF 104 CAPLUS COPYRIGHT 2003 ACS
AN 1976:33399 CAPLUS
DN 84:33399
TI **Antistatic** additives for **fuels**
AU Andress, H. J., Jr.
CS Mobil Res. Dev. Corp., Paulsboro, NJ, USA
SO Preprints - American Chemical Society, Division of Petroleum Chemistry (1973), 18(4), 687-92
CODEN: ACPCAT; ISSN: 0569-3799
DT Journal
LA English
CC 51-9 (Fossil Fuels, Derivatives, and Related Products)
AB Many polar org. and organometallic compds. greatly increase the conductivity of **fuels**. Low concns. (in same case <1 ppm) of many such additives will raise the conductivity to a level which lessens the possibility of explosions from generation of static electricity during handling. Structure and mol.-wt. effects of the additives and the nature of the substrate affect the degree and extent of activity of **antistatic** agents.
ST fuel **antistatic** additive; safety **fuel**
handling **antistatic**
IT Amines, uses and miscellaneous
RL: USES (Uses)
(**antistatic** agents manuf. from, for **fuels**)
IT Fuel oil additives
(**antistatic**, polar org. and organometallic compds.)
IT Fuel oil
(conductivity of, handling safety in relation to)
IT Hydrocarbon oils
Kerosine
Stoddard solvent
RL: PRP (Properties)
(conductivity of, handling safety in relation to)
IT Safety
(in handling of **fuels**, **antistatic** additives in relation to)
IT **Fuels**, rocket

(jet, conductivity of, handling safety in relation to)

IT Naphthenic acids, compounds
 RL: USES (Uses)
 (magnesium salts, derivs., **antistatic** agents, for
 fuels)

IT Carbonyls
 RL: USES (Uses)
 (manganese, **antistatic** agent, for **fuels**)

IT **Antistatic** agents
 (org. and organometallic polar compds., for **fuels**)

IT 2,5-Furandione, polymer with ethene, diamine derivs.
 2,5-Furandione, polymer with ethenyl acetate, diamine derivs.
 2,5-Furandione, polymer with ethenylbenzene, diamine derivs.
 2,5-Furandione, polymer with methoxyethene, diamine derivs.
 2,5-Furandione, polymers with olefins
 Acetic acid ethenyl ester, polymer with 2,5-furandione, diamine derivs.
 Benzene, ethenyl-, polymer with 2,5-furandione, diamine derivs.
 Ethene, polymer with 2,5-furandione, diamine derivs.
 Ethene, methoxy-, polymer with 2,5-furandione, diamine derivs.
 Glycine, N,N'-1,2-ethanediylbis[N-(carboxymethyl)-, tetrakis(Primene 81R)
 amide derivs
 Magnesium, salts with naphthenic acids
 Primene 81R, amide with EDTA
 RL: USES (Uses)
 (**antistatic** agent, for **fuels**)

IT 1,2-Ethanediamine, N,N'-bis(2-aminoethyl)-, adduct with nonyl phenol, zinc
 complex
 RL: PREP (Preparation)
 (prepn. of)

IT 12108-13-3 25154-52-3 25779-50-4 57843-16-0 57843-18-2
 57847-46-8 57847-47-9 57847-48-0 57847-50-4 57847-51-5
 57847-52-6 57847-53-7 57918-10-2 59952-71-5
 RL: USES (Uses)
 (**antistatic** agent, for **fuels**)

IT 57847-49-1
 RL: USES (Uses)
 (**antistatic** agents, for **fuels**)

IT 544-76-3
 RL: PRP (Properties)
 (conductivity of, additives for increase of)

L3 ANSWER 70 OF 104 CAPLUS COPYRIGHT 2003 ACS
 AN 1975:19107 CAPLUS
 DN 82:19107
 TI Metal 3,5-diisopropylsalicylate **antistatic** agents for liquid
 fuels
 IN Eicke, Hans; Arnold, Vladimir; L'Eplattenier, Francois
 PA Ciba-Geigy A.-G.
 SO Ger. Offen., 15 pp.
 CODEN: GWXXBX
 DT Patent
 LA German
 IC C07D; C10L; C08F
 CC 49-7 (Industrial Inorganic Chemicals)
 Section cross-reference(s): 51

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 2357706	A1	19740530	DE 1973-2357706	19731119
	CH 579579	A	19760915	CH 1972-17010	19721122
	US 3884949	A	19750520	US 1973-413993	19731108
	IT 1001804	A	19760430	IT 1973-31423	19731116

NL	7315831	A	19740527	NL	1973-15831	19731119
JP	49081353	A2	19740806	JP	1973-130620	19731120
FR	2207904	A1	19740621	FR	1973-41431	19731121
GB	1419801	A	19751231	GB	1973-53913	19731121
PRAI	CH 1972-17010		19721122			
AB	<p>ML2 (M = Ni, Zn, Cu, Mn, Ca, Be, VO, and ZrO; HL = 3,5-diisopropylsalicylic acid) and M₁LOH (M₁ = Ni, Mn, Be, Fe, and ZrO) were manufd. by reaction of the metal chlorides with HL in MeOH in the presence of MeONa optionally with aftertreatment with H₂O. The salts were used as antistatic agents for liq. fuels, e.g. gasoline, kerosine, and mineral oil, at concn. 10-3-10-4 mole/l. Thus, nickel bis(3,5-diisopropylsalicylate) was manufd. from NiCl₂ and HL in MeOH by slow addn. of MeONa, evapn. of the solvent, dissoln. in benzene, filtration of NaCl, evapn. of benzene, dissoln. in ether, evapn., and drying at 95.degree.. Benzene contg. 10-4 mole NiL₂/l. and 10-5 mole Aerosol OT/l. had elec. cond. 5.28 .times. 10-12 .OMEGA.-1cm⁻¹ at 20.degree..</p>					
ST	<p>propylsalicylate metal antistatic agent; nickel diisopropylsalicylate antistatic agent; salicylate metal antistatic agent; zinc diisopropylsalicylate antistatic agent; copper diisopropylsalicylate antistatic agent; manganese diisopropylsalicylate antistatic agent; calcium diisopropylsalicylate antistatic agent; beryllium diisopropylsalicylate antistatic agent; vanadyl diisopropylsalicylate antistatic agent; zirconyl diisopropylsalicylate antistatic agent; iron diisopropylsalicylate antistatic agent; benzene diisopropylsalicylate antistatic agent; fuel liq diisopropylsalicylate antistatic agent; gasoline diisopropylsalicylate antistatic agent; kerosine diisopropylsalicylate antistatic agent</p>					
IT	<p>Gasoline Kerosine RL: USES (Uses) (antistatic agents for, metal diisopropylsalicylates)</p>					
IT	<p>Fuel oil additives (antistatic agents, metal diisopropylsalicylates)</p>					
IT	<p>Antistatic agents (metal diisopropylsalicylates, for liq. fuels)</p>					
IT	<p>71-43-2, uses and miscellaneous RL: USES (Uses) (antistatic agents for, metal diisopropylsalicylates as)</p>					
IT	21246-18-4P	37025-91-5P	51232-93-0P	53770-31-3P	53770-32-4P	
	53770-33-5P	53770-34-6P	53770-35-7P	53770-36-8P	53770-37-9P	
	53770-38-0P	53770-39-1P	53803-06-8P			
	RL: IMF (Industrial manufacture); PREP (Preparation) (manuf. of, antistatic agents, for liq. fuels)					
L3	ANSWER 73 OF 104 CAPLUS COPYRIGHT 2003 ACS					
AN	1974:507813 CAPLUS					
DN	81:107813					
TI	Antistatic prevention for combustible organic liquids					
IN	Maaumo, Hideo; Ninomiya, Morio; Matsuzaki, Yasushi					
PA	Lion Fat and Oil Co., Ltd.					
SO	Jpn. Tokkyo Koho, 6 pp. CODEN: JAXXAD					
DT	Patent					
LA	Japanese					
IC	C09K; C10L; C10M					
CC	46-4 (Surface Active Agents and Detergents) Section cross-reference(s): 51					
FAN.CNT 1						

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 49003805	B4	19740129	JP 1964-69745	19641211
PRAI	JP 1964-69745		19641211		
AB	Salts of amphoteric surfactants, e.g., a reaction product of an amine, e.g., laurylamine (I) [124-22-1], with ethylene oxide (II) [75-21-8] or a similar compd., Na monochloroacetate (III) [3926-62-3] and magnesium chloride [7786-30-3], were added to gasoline, benzene [71-43-2], etc. as antistatic agents. Thus, a reaction product of I with II, III, and Mg chloride was added (1-100 ppm) to gasoline.				
ST	antistatic agent amphoteric surfactant; gasoline antistatic agent; benzene antistatic agent				
IT	Antistatic agents (amphoteric surfactant for, for combustible org. liqs.)				
IT	Gasoline RL: USES (Uses) (antistatic agents for, amphoteric surfactants salts as)				
IT	Surfactants (salts, antistatic agents, for combustible org. liqs.)				
IT	1-Dodecanamine, reaction products with ethylene oxide and sodium monochloroacetate and magnesium chloride Acetic acid, chloro-, sodium salt, reaction products with laurylamine and ethylene oxide and magnesium chloride Magnesium chloride, reaction products with laurylamine and ethylene oxide and sodium monochloroacetate Oxirane, reaction products with laurylamine and sodium monochloroacetate and magnesium chloride RL: USES (Uses) (antistatic agents, for combustible org. liqs.)				
IT	71-43-2, uses and miscellaneous RL: USES (Uses) (antistatic agents for, amphoteric surfactant salts as)				

L3 ANSWER 77 OF 104 CAPLUS COPYRIGHT 2003 ACS
AN 1973:444201 CAPLUS
DN 79:44201
TI Antistatic treatment of combustible organic liquids
IN Marumo, Hideo
SO Jpn. Kokai Tokkyo Koho, 3 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
NCL 13(9)B31; 18FO
CC 51-9 (Petroleum, Petroleum Derivatives, and Related Products)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 48022365	A2	19730322	JP 1971-56055	19710728
PRAI	JP 1971-56055		19710728		
AB	Salts of compds. of the general formula RCH(OZ)CH ₂ [NX(CH ₂) _m] NYW[X, Y, W = H or RCH(OZCH ₂ , (CHR'CHR'O) H; m = 2-100; n R = hydrocarbon radical with 4-30 C atoms; X, Y, Z, W need not be identical] with fatty acids, rosin, dimer acids, sulfonic acids, and Et sulfate are added to confer antistatic properties to combustible org. compds. The additives are useful in preventing ignition and (or) explosion of combustibles such as gasoline and jet fuels and, furthermore, do not dissolve in water, leave only small amts. of ash on burning, and do not adversely affect the properties of the combustible material. Typical compds. useful for the purpose of the invention are: C12H25C H(OH)CH ₂ (CH ₂) ₃ N(CH ₂ CH ₂ OH) ₂ , C10H21CH(OH)VH ₂ (I), and C16H33CH(OH)CH ₂ CH(CH ₂) ₃ CHCH ₂ CH(OH)C16]H33. Sp. conductivities (mho/cm) of				

gasoline, petroleum ether, **kerosine**, and benzene without any additive and with 0.001 wt. % I were, resp.: 9.0 .times. 10-14, 8.5 .times. 10-10; 4.0 .times. 14, 6.8 .times. 10-10; 2.9 .times. 10-14, 7.6 .times. 10-13, 0.9.0.times.10-10.

ST **antistatic** additive flammable hydrocarbon

IT **Antistatic** agents
 ((hydroxyalkyl)amine salts, for hydrocarbons)

IT Ligoine
RL: USES (Uses)
 (antistatic additives for, (hydroxyalkyl)amine salts as)

IT **Kerosine**
RL: TEM (Technical or engineered material use); USES (Uses)
 (antistatic additives for, (hydroxyalkyl)amine salts as)

IT **Gasoline** additives
 (antistatic, (hydroxyalkyl)amine salts)

IT 71-43-2, uses and miscellaneous
RL: TEM (Technical or engineered material use); USES (Uses)
 (antistatic additives for, (hydroxyalkyl)amine salts as)

IT 4054-54-0 42381-51-1 43143-43-7
RL: MOA (Modifier or additive use); USES (Uses)
 (antistatic agents, for hydrocarbons)

L3 ANSWER 78 OF 104 CAPLUS COPYRIGHT 2003 ACS
AN 1973:433437 CAPLUS
DN 79:33437

TI **Antistatic** treatment of combustible organic liquids
IN Marumo, Hideo
SO Jpn. Kokai Tokkyo Koho, 8 pp.
CODEN: JKXXAF

DT Patent
LA Japanese
NCL 13(9)B31; 18F0
CC 51-9 (Petroleum, Petroleum Derivatives, and Related Products)

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 48022364	A2	19730322	JP 1971-56054	19710728
PRAI JP 1971-56054		19710728		

AB Substituted amino acid salts such as [[RCH(OH)CH₂]-nNXCHYCO₂]_xZy, where R = hydrocarbon radical with 4-30 C atoms; n = 1 or 2; X = H or an acyl group with 1-18 C atoms; Z = H, org. amine, or a metal other than an alkali metal; Y = H, Me, CH₂CHMe₂, PhCH₂, CH₂CO₂, CH₂CH₂CO₂, (CH₂)₂NH₂, (CH₂)₄NH₂, (CH₂)₃NX[CH₂CH(OH)R]_n, (CH₂)₄NX[CH₂CH(OH)R]_n; x and y are detd. by the valence state of Z when it is a metal, or their acid salts can be added singly or in combination to confer **antistatic** properties to combustible org. liqs. by raising their elec. conductivities. Thus, the addn. of 0.001 wt. % [C₂H₅CH(OH)CH₂NHCH(CO₂)(CH₂CH₂CO₂)]Ca to **gasoline**, petroleum ether, **kerosine**, and benzene increases their sp. elec. conductivities (mho/cm) as follows (values for blank given in parentheses): 6.2 .times. 10-11(9.0 .times. 10-14), 3.5 .times. 10-11(4.0 .times. 10-14), 4.2 .times. 10-11(2.9 .times. 10-14), and 5.5 .times. 10-11(5.0 .times. 10-13). Data are given for 64 additives.

ST **antistatic** additive flammable hydrocarbon; amino acid hydrocarbon additive

IT **Antistatic** agents
 (amino acid salts, for hydrocarbons)

IT **Kerosine**
Ligoine
RL: USES (Uses)
 (antistatic agents for, amino acid salts as)

IT **Gasoline** additives

(antistatic, amino acid salts)
 IT 71-43-2, uses and miscellaneous
 RL: USES (Uses)
 (antistatic agents for, amino acid salts as)
 IT 42852-42-6
 RL: USES (Uses)
 (antistatic agents, for hydrocarbons)

L3 ANSWER 79 OF 104 CAPLUS COPYRIGHT 2003 ACS
 AN 1973:100215 CAPLUS
 DN 78:100215
 Correction of: earlier abstract

TI **Antistatic** additives for hydrocarbon **fuels**
 IN Filachek, Lawrence A.; Rakow, Marvin S.
 PA Cities Service Oil Co.
 SO U.S., 6 pp.
 CODEN: USXXAM

DT Patent
 LA English
 IC C10L
 NCL 044055000
 CC 51-9 (Petroleum, Petroleum Derivatives, and Related Products)
 FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI US 3674450	A	19720704	US 1971-136993	19710423
PRAI US 1971-136993		19710423		

AB The **antistatic** additives consist of a synergistic mixt. of (a) a component prep'd. from 3 parts by wt. of the condensation product of 1 mole dimer acid and 2 moles N-tallow-1,3-propylenediamine with 1 part of a mixt. of 65% diisooctyl hydrogen orthophosphate and 35% isooctyl dihydrogen orthophosphate and (b) the mixed **Ba** and Zn salts of a mixt. of C16-24 naphthenic acids and 2-ethylhexanoic acid, together with the monobutyl ether of ethylene glycol. The ratio of component b to component a is 1-15:1. The hydrocarbon **fuel** should be a distillate **fuel**, such as no. 1 or no. 2 **fuel** oil, **diesel fuel**, or turbine **fuel** and should contain 3-25 parts additive per 1000 bbl. The **fuel** oil compns. have thermal and oxidative stabilities and good H₂O tolerance. Correction of CA 75:128711q.

ST fuel **antistatic** additive; **fuel** oil
antistatic additive; **diesel fuel**
antistatic additive; amide **fuel antistatic** additive;
additive; phosphate **fuel antistatic** additive;
barium salt fuel antistatic additive; zinc
salt fuel antistatic additive; ether **fuel**
antistatic additive

IT **Fuel** oil additives
 (antistatic agents, propylenediamine-acid reaction products and carboxylic acid salts)

IT Naphthenic acids, compounds
 RL: USES (Uses)
 (**barium** and zinc salts, **antistatic** additives for **fuels**)

IT Fatty acids, polymers
 RL: USES (Uses)
 (dimers, reaction products with isooctyl phosphate and N-tallow propylenediamine **antistatic** additives for **fuels**)

IT Fuels, rocket
 (jet, **antistatic** additives for, propylenediamine-acid reaction products and carboxylic acid salts)

IT 1,3-Propanediamine, N-tallow derivs., reaction products with dimer acid

and isoctyl phosphate
 Isooctyl alcohol, phosphate, reaction products with dimer acid and
 N-tallow propylene diamine
 RL: USES (Uses)
 (antistatic additives, for fuels)

IT 111-76-2 41331-33-3
 RL: USES (Uses)
 (antistatic additives, for fuels)

L3 ANSWER 80 OF 104 CAPLUS COPYRIGHT 2003 ACS
 AN 1973:32375 CAPLUS
 DN 78:32375
 TI Antistatic additive for gasoline
 IN Boyarchenko, O. E.
 PA Sverdlov, Ya. M., Motor Plant, Perm
 SO U.S.S.R.
 From: Otkrytiya, Izobret., Prom. Obraztsy, Tovarnye Znaki 1972, 49(25),
 96.
 CODEN: URXXAF

DT Patent
 LA Russian
 IC C10L
 CC 51-5 (Petroleum, Petroleum Derivatives, and Related Products)
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	SU 348595		19720823	SU	19700309
AB	The additive contains oxidized petrolatum 2.2-2.8, LiOH 0.01-0.04, a synthetic rubber 0.9-1.1, industrial oils 6.6-6.8, PhOH 0.61-0.62, Ca sulfonaphthenate 4.05-4.07, a reaction product [of S ₂ Cl ₂ with a polymeric distillate of benzenesulfonic acid and Ba(OH) ₂] 1.025-1.175, Ph ₂ NH 0.29-0.31, a transformer oil 35-40 wt. %, and the rest an aviation oil.				
ST	antistatic additive gasoline; oxidized petrolatum contg gasoline; rubber contg gasoline additive; sulfonaphthenate contg gasoline additive				
IT	Gasoline additives (antistatic)				
IT	Rubber, synthetic Hydrocarbon oils RL: USES (Uses) (gasoline antistatic additives contg.)				
IT	Petrolatum RL: USES (Uses) (oxidized, gasoline antistatic additives contg.)				
IT	Naphthenic acids, compounds RL: USES (Uses) (sulfur derivs., calcium salts, gasoline antistatic additives contg.)				
IT	Barium hydroxide, reaction products with benzenesulfonic acid and sulfur chloride Benzenesulfonic acid, reaction products with barium hydroxide and sulfur chloride Sulfur chloride (S ₂ Cl ₂), reaction products with barium hydroxide and benzenesulfonic acid RL: USES (Uses) (gasoline antistatic additives contg.)				
IT	108-95-2, uses and miscellaneous 122-39-4 1310-65-2 RL: USES (Uses) (gasoline antistatic additives contg.)				

L3 ANSWER 83 OF 104 CAPLUS COPYRIGHT 2003 ACS

AN 1970:113535 CAPLUS
 DN 72:113535
 TI Addition of **antistatic** organic liquids to **fuels**
 IN Childs, Elbert B.; Bueltman, William T.
 PA Mobil Oil Corp.
 SO Ger. Offen., 12 pp.
 CODEN: GWXXBX
 DT Patent
 LA German
 IC C10L
 CC 51 (Petroleum, Petroleum Derivatives, and Related Products)
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 1811306		19690814		
PRAI	US		19671127		
AB	A 1:1 to 1:6 mixt. (0.5-1 ppm) of Cr alkyl (C8-24) salicylate with mainly Cr alkyl (C16) salicylate and Ba sulfonate or Na dioctyl sulfosuccinate is added to petroleum products to reduce static and danger of explosion.				
ST	salicylates fuel antistatic agents; fuel antistatic agents salicylates; antistatic fuel agents salicylates				
IT	Fuel oil, uses and miscellaneous (antistatic -explosion inhibitor additives for)				
IT	Sulfonic acids, compounds RL: USES (Uses) (barium salts, antistatic -explosion inhibitor additives for fuel oil)				
IT	Explosions (prevention of, of fuel oil , agents for)				
IT	Electric charge (prevention of, on fuel oil , agents for)				
IT	Salicylic acid, alkyl, chromium salts RL: USES (Uses) (antistatic -explosion inhibitor additives, for fuel oil)				
IT	1639-66-3 RL: USES (Uses) (antistatic -explosion inhibitor additives, for fuel oil)				
L3	ANSWER 86 OF 104 CAPLUS COPYRIGHT 2003 ACS				
AN	1968:97312 CAPLUS				
DN	68:97312				
TI	Antistatic fuel additives				
IN	Marumo, Hideo; Ninomiya, Morio; Matsuzaki, Yasushi; Takai, Makoto				
PA	Lion Fat and Oil Co., Ltd.				
SO	U.S., 9 pp. CODEN: USXXAM				
DT	Patent				
LA	English				
NCL	044062000				
CC	51 (Petroleum, Petroleum Derivatives, and Related Products)				
FAN.CNT 1	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 3359086		19671219	US	19650201
GI	For diagram(s), see printed CA Issue.				
AB	The elec. cond. of a hydrocarbon distillate fuel , dry cleaning solvent, etc. is increased to .ltoreq.1000 picomho/m. by the addn. of 10-50 ppm. by wt. of the Mg, Ca, Ba, Zn, Al ,				

or Pb salt of N-(aminoethyl)-N-(carboxymethyl)-N'-octadecanoyl ethylenediamine, N-(carboxymethyl)-N-(hydroxyethyl)-2-undecylimidazolinium hydroxide, dodecylaminopropionic acid, or bis[poly(oxyethylene)]dodecyl(carboxymethyl)ammonium hydroxide. Thus, the elec. cond. of inflammable org. liqs. contg. I were as follows (inflammable liq. and its elec. cond. (in picohmo/m.) when contg. 0, 1, 10, and 100 kg./1000 m.3 I given): **gasoline**, 3.5, 860, 2260, 4250; **kerosine**, 15.0, 780, 2050, 4100; benzene, 2.0, 910, 2170, 4340; toluene, 3.4, 880, 2300, 3980. No detriment to the performance of the hydrocarbons as turbine or reciprocating engine **fuels**, solvents, etc. was observed from the use of these compds. at the recommended concns.

ST ADDITIVES **ANTISTATIC FUEL; ANTISTATIC**

FUEL ADDITIVES; FUEL ADDITIVES **ANTISTATIC**

IT Ammonium compounds, substituted, preparation

(carboxymethyl)octadecyl--- salts and polyalkylene derivs.)

IT **Fuels**

Fuels, jet

Kerosine

RL: USES (Uses)

(**antistatic** additives for, amine salts as)

IT **Gasoline** additives

(**antistatic**, amine salts as)

IT Electric charge

(prevention of, in **fuels**, additives for, amine salts as)

IT 2-Imidazolinium, 1-(carboxymethyl)-1-(2-hydroxyethyl)-2-undecyl-, hydroxide, metal salts

2-Imidazolinium, 1-(carboxymethyl)-2-heptadecyl-1-(2-hydroxyethyl)-, hydroxide, metal salts

2-Imidazolinium, 1-(carboxymethyl)-2-heptadecyl-1-[2-(2-hydroxyethoxy)ethyl]-, hydroxide, metal salts

Ammonium, (carboxymethyl)dodecylbis(2-hydroxyethyl)-, hydroxide, metal salts

Glycine, N-(2-aminoethyl)-N-(2-stearamidoethyl)-, metal salts

Glycine, N-(2-hydroxyethyl)-N-(2-stearamidoethyl)-, metal salts

Glycine, N-(2-hydroxyethyl)-N-(2-undecanamidoethyl)-, metal salts

Glycols, polyethylene, ether with (carboxymethyl)octadecylammonium hydroxide (2:1), metal salts

Glycols, polypropylene, ether with (carboxymethyl)octadecylammonium hydroxide (2:1), metal salts

.beta.-Alanine, N-octadecyl-, metal salts

RL: USES (Uses)

(as **fuel antistatic** additive)

L3 ANSWER 89 OF 104 CAPLUS COPYRIGHT 2003 ACS

AN 1967:501627 CAPLUS

DN 67:101627

TI **Antistatic** additives for petroleum products

AU Paushkin, Ya. M.; Vishnyakova, T. P.; Matskin, L. A.; Krylov, I. F.; Stytsenko, V. D.

SO Khimiya i Tekhnologiya Topliv i Masel (1967), 12(7), 53-6

CODEN: KTPMAG; ISSN: 0023-1169

DT Journal

LA Russian

CC 51 (Petroleum, Petroleum Derivatives, and Related Products)

AB An app. for detn. of the static electricity formed during flow of petroleum products is described. Expts. were carried out with about 20 different additives in **gasoline** B-70 and **fuel** TS-1.

Effects of 14 different additives at a concn. of 0.1 g./l. are tabulated. Oleates and naphthenates of Cr and Co were most effective in increasing the elec. cond. and in decreasing the formation of static electricity. The dependence of the effect of the additives on their concn. is stated

graphically. In the case of Cr oleate, the concn. 10-3 g./l. is shown to be adequate.

ST OLEATES CO CR **ANTISTATICS**; COBALT NAPHTHENATES OLEATES
ANTISTATICS; PETROLEUM PRODUCTS **ANTISTATICS**
ANTISTATICS PETROLEUM PRODUCTS; **GASOLINE**
ANTISTATICS; CHROMIUM NAPHTHENATES OLEATES **ANTISTATICS**; NAPHTHENATES CO CR **ANTISTATICS**

IT Naphthenic acids, compounds
RL: USES (Uses)
(salts, as **gasoline** and jet **fuel** static electricity inhibitors)

IT Fuels, jet
Gasoline additives
(static electricity inhibitors, oleates and naphthanates as)

IT Oleic acid, salts
RL: USES (Uses)
(as **gasoline** and jet **fuel** static electricity inhibitors)

L3 ANSWER 91 OF 104 CAPLUS COPYRIGHT 2003 ACS
AN 1966:507103 CAPLUS
DN 65:107103
OREF 65:19910b-d
TI **Antistatics** for inflammable organic liquids
PA Lion Fat & Oil Co., Ltd.
SO 22 pp.
DT Patent
LA Unavailable
IC C10P
CC 27 (Petroleum and Petroleum Derivatives)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	NL 65001170		19660801	NL	19650129

GI For diagram(s), see printed CA Issue.

AB I-IV are **antistatics** for **gasoline**, **kerosine**, benzene, toluene, xylene, Et₂O, dioxane, CS₂, and other inflammable solvents. By addn. of 1, 10, and 100 g./m.8 N-carboxymethyl-N-hydroxyethyl-N'-undecyloylethylenediamine **Mg** salt, the cond. of **gasoline** is improved from 3.5 to 670, 1480, and 3650 picomho/m.3, resp. Addn. of N-carboxymethyl-N-hydroxyethyl-N-hydroxy-2-undecylimidazoline. **Mg** salt increases the cond. from 3.5 to 860, 2260, 4250, resp. The electric charge .mu.C./m.3 of the liquids during flow in pipelines or discharge of tanks is decreased, e.g. from 43 (**gasoline**) to 28.5, 11.5, or 6.4, resp.

IT Combustibles
(**antistatic** additive for liquid, prevention of elec. charge formation during flow by)

IT Amides
(derivs., metal salts, as **antistatic** additives for flammable org. liquids)

IT Fuels
(**diesel**, elec. charge prevention on, **antistatic** additives for)

IT Kerosine
(elec. charge prevention in, **antistatic** additives for)

IT Gasoline
(elec. charge prevention on, **antistatic** additives for)

IT Amino acids
(metal salts, as **antistatic** additives for flammable org. liquids)

IT Alkaline earth salts

(of amide derivs., amino acid derivs. and imidazoline derivs., as
antistatics for flammable org. liquids)
 IT Electric charge
 (prevention of, on flammable org. liquid, additives for)
 IT Imidazoline
 (derivs., metal salts, as **antistatic** additives for flammable
 org. liquids)
 IT Barium salts.
 Calcium salts
 Lead salts
 Magnesium salts
 (of amide derivs., amino acid deriv. and imidazoline derivs., as
 antistatics for flammable org. liquids)
 IT Aluminum salts
 (of amide derivs., amino acid derivs. and imidazoline derivs., as
 antistatics for flammable org. liquids)
 IT Imidazolinium compounds, 1-(carboxymethyl)-1-(2-hydroxyethyl)-2-undecyl-2-
 , Fe complex
 (salts, as **antistatics** for flammable org. liquids)
 IT 60-29-7, Ethyl ether 71-43-2, Benzene 75-15-0, Carbon disulfide
 108-88-3, Toluene 123-91-1, p-Dioxane 1330-20-7, Xylene
 (elec. charge prevention on, **antistatic** additives for)
 IT 14206-12-3, Glycine, N-(2-hydroxyethyl)-N-(2-undecanamidoethyl)-
 (metal salts, as **antistatics** for inflammable org. liquids)
 IT 7440-66-6, Zinc
 (with amide derivs., amino acid deriv. and imidazoline derivs., as
 antistatics for flammable org. liquids)

L3 ANSWER 93 OF 104 CAPLUS COPYRIGHT 2003 ACS

AN 1966:92448 CAPLUS

DN 64:92448

OREF 64:17330a-b

TI **Antistatic** additives for hydrocarbon oils

IN Walters, Harold C.

PA Phillips Petroleum Co.

SO 3 pp.

DT Patent

LA Unavailable

NCL 060035400

CC 27 (Petroleum and Petroleum Derivatives)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 3240009		19660315	US	19620323
AB	Chlorophylls a and b, chlorophyllides a and b, methylchlorophyllides a and b, ethylchlorophyllides a and b, pheophytins a and b, pheophorbides a and b, methylpheophorbides a and b, ethylpheophorbides a and b, phytochlorine e5, phytorhodine g6, and K chlorophyllins a and b are used in concns. of 10-200 ppm. (by wt.) to impart elec. cond. to jet fuels . Sp. conductivities up to 450 .times. 10-12 ohm-1-cm.-1 can be attained. Anti-icing additives of the formula R(OCH2CH2)xOH, where R = Me, Et, Pr, Bu, Ph, and tolyl, are compatible with these antistatic agents.				
IT	Hydrocarbon oils (elec.-charge prevention in, by chlorophylls)				
IT	Fuels (jet, elec.-charge prevention in. by chlorophylls)				
IT	Chlorophyll (as elec.-charge preventors in jet fuels and hydrocarbon oils)				

L3 ANSWER 96 OF 104 CAPLUS COPYRIGHT 2003 ACS

AN 1965:58183 CAPLUS
 DN 62:58183
 OREF 62:10277b-c
 TI **Antistatic** additives for combustible organic liquids
 IN Rogers, Dilworth T.; McDermott, John P.
 PA Esso Research and Engineering Co.
 SO 5 pp.; Continuation-in-part of U.S. 2,992,909
 DT Patent
 LA Unavailable
 NCL 044051000
 CC 27 (Petroleum and Petroleum Derivatives)
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 3161486		19641215	US	19610518

AB CA 55, 27875d). The colloidal, nondialyzable, fraction of **antistatic** additives is more effective than the dialyzable fraction. A mixt. of 10 g. dodecylphenol sulfide and 0.37 g. Cr(OAc)3 heated on a steam bath 12 hrs. yielded a dark, reddish-green viscous product which was dialyzed in a finger-shaped rubber, semipermeable membrane suspended in slowly refluxing isoctane. Detn. of the elec. cond. of the 2 fractions in isoctane showed the nondialyzable fraction to be 1000 times as effective for increasing the sp. cond. The process is esp. applicable to combustible org. liquids, b. 75-750.degree.F., such as hydrocarbon oils, petroleum distillate **fuels**, and volatile org. liquids of .gtoreq. 12 C atoms/mol. on the av. Use in jet engine **fuel** is emphasized.

IT Amines
 (alkylenedi-, polyalkoxy derivs., **fuel** oil stabilization by)
 IT Organic compounds
 (elec. cond. of liquid, agents for increasing)
 IT Conductivity, electric and(or) Conduction, electric
 (increasing of, of org. liquid, agents for)
 IT **Fuels**
 (jet, elec. charge inhibitors for)
 IT Electric charge
 (prevention of, in org. liquid, agents for)
 IT Phenol, dodecyl-, sulfide from
 (reaction product with Cr(OAc)3, as elec. charge inhibitor)
 IT Chromium acetate, Cr(OAc)3
 (reaction product with dodecylphenol sulfide, as elec. charge inhibitor)

L3 ANSWER 98 OF 104 CAPLUS COPYRIGHT 2003 ACS
 AN 1963:440763 CAPLUS
 DN 59:40763
 OREF 59:7287g-h
 TI Hydrocarbon **fuels** with improved electrical conductivity
 IN van der Minne, Johan L.; Hermanie, Pieter H. J.; Douwes, Cornelis
 PA Shell internationale Maatschappij N.V.
 SO 7 pp.
 DT Patent
 LA Unavailable
 CC 27 (Petroleum and Petroleum Derivatives)

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	NL 10003681		19630115	NL	19590528

AB To an org. liquid, such as aircraft **fuel**, a Cr salt (I) of an alkylsalicylic acid with .gtoreq. 1 C8+ alkyl group C atoms is added (Neth. 103,192). The elec. resistance is further reduced by addn. of a N-free polymer (II) of mol. wt. 5000 contg. free COOH groups and chains with >8 C atoms. Alternatively, a salt of II with **Ca** or an org.

base may be added. For example, to a gasoline, b.
80-110.degree., enough I was added so that the Cr content would be
4 .times. 10-7 g. atom/l. Then, 0.001% by wt. of a Ca salt of a
copolymer of lauryl methacrylate 254 and methacrylic acid 86 parts by wt.
(mol. wt. 90,000) contg. 1.54% by wt. Ca was added.

- IT **Gasoline**
(antistatic agents, carboxylic polymers and Cr alkylsalicylates as)
- IT Hydrocarbon oils
(elec. cond. of, carboxylic polymers and Cr alkyl salicylates in increasing)
- IT **Fuels**
(elec. cond. of, carboxylic polymers and Cr alkylsalicylates in increasing)
- IT Conductivity, electric and(or) Conduction, electric
(of hydrocarbon liquids, carboxylic polymers and Cr alkylsalicylates in increasing)
- IT Chromium salts
(of alkylsalicylic acids, as hydrocarbon elec. cond. increasers)
- IT 69-72-7, Salicylic acid
(alkyl derivs., Cr salts, hydrocarbon oil elec.-cond. increase by)

L3 ANSWER 99 OF 104 CAPLUS COPYRIGHT 2003 ACS

AN 1963:414787 CAPLUS

DN 59:14787

OREF 59:2580a-e

TI Liquid hydrocarbon compositions

IN Skei, Thurston; Douglas, James E.

PA Shell Oil Co.

SO 7 pp.

DT Patent

LA Unavailable

CC 27 (Petroleum and Petroleum Derivatives)

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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PI US 3013868		19611219	US	19590527
			GB	

AB The danger of spark discharge because of static elec. charge accumulations over flammable hydrocarbon liquids in the boiling range of from -40.degree.F. to 700.degree.F. was prevented by an additive compn. which increased the cond. of the liquid. An esp. effective compn. was made up from a Cr alkyl salicylate having a mol. wt. of 500-2500 and a copolymer of vinylpyridines and at least 1 ester of an acrylic acid and a longchain aliphatic alc. contg. at least 10 C atoms. The mole ratio of the vinylpyridine to ester in the compn. varied from 1:15 to 2:1, the mol. wt. of the copolymer was between 5 .times. 103 and 25 .times. 105, and the wt. ratio of copolymer to Cr was between 20:1 and 5000:1. Other effective additives were: Fe(III) diisopropylsalicylate, Cr(III) dioctyl sulfosuccinate, vanadium alkanesulfonate, Ti(III) salt of a C14-18 alkyl-substituted salicylic acid, Co(III)dioctyl sulfosuccinate, Mn(II) salt of a C14-18 alkyl-substituted salicylic acid, and Cr(III) salt of dinonylnaphthalenesulfonic acid. The remarkable effectiveness of Cr(III) diisopropylsalicylate was exhibited when 1.4 .times. 10-5 g. atom of Cr/l. increased the cond. of pure hydrocarbon (benzene, heptane, etc.) from about 1 .times. 10-16-1 .times. 10-13 ohm-1 cm.-1 to 110 .times. 10-13-130 .times. 10-13 ohm-1 cm.-1 Similarly, the addn. of Cr(III) dioctyl sulfosuccinate in a concn. of 1 .times. 10-6, 1 .times. 10-5, and 1 .times. 10-4 g. atom of Cr/l. of gasoline increased the cond. to 1.4 .times. 10-13, 180 .times. 10-13, and 1300 .times. 10-13 ohm-1 cm.-1, resp. The liquid hydrocarbon fuel compn. also contained 1 .times. 10-4 to 1 .times. 10-9 mole/l. of a Ca dialkyl sulfosuccinate. The polymer was prep'd. from stearyl methacrylate 29.3,

lauryl methacrylate 49.7, Me methacrylate 16, and methylvinylpyridine 5% in a 300-gal. stainless steel autoclave. A 50/50 mixt. of C6H6 and neutral petroleum oil was added to the autoclave to provide 1 part of the mixt. per 3 parts of the total monomer, tert-BuO2 (0.25%) was then added, and the mixt. was heated at 120.degree. for 7 hrs. When the reaction was completed, the C6H6 was stripped off to final condition of 120.degree. and 10 mm. Hg with N sparging. The C6H6-free product was then dild. with neutral oil to a polymer content of 30% by wt. and filtered at 100-20.degree..

- IT **Gasoline**
(antistatic agents, Cr alkyl salicylates and vinylpyridine-acrylate polymers as)
- IT **Fuel oil**
(elec. cond. of, Cr alkyl salicylates and vinylpyridine-acrylate polymers in increasing)
- IT **Hydrocarbon oils**
(elec. cond. of, Cr alkyl salicylates and vinylpyridineacrylate polymers in increasing)
- IT **Conductivity, electric and(or) Conduction, electric**
(of hydrocarbon oil, Cr alkyl salicylates and vinylpyridine-acrylate polymers in increasing)
- IT **Chromium salts**
(hydrocarbon oil elec. cond. increase by)
- IT 69-72-7, **Salicylic acid**
(alkyl derivs., Cr salts, hydrocarbon oil elec.-cond. increase by)
- IT 1337-81-1, **Pyridine, vinyl-**
(derivs., polymers with acrylates, hydrocarbon oil elec. cond. increase by)
- IT 79-10-7, **Acrylic acid**
(ester polymers, with 1-vinylpyridine derivs., hydrocarbon oil elec. cond. increase by)

L3 ANSWER 101 OF 104 CAPLUS COPYRIGHT 2003 ACS

AN 1962:470521 CAPLUS

DN 57:70521

OREF 57:14078c-e

TI Liquid hydrocarbons with improved electrical conductivity

PA Shell Internationale Research Maatsehappij N. V.

SO 9 pp.

DT Patent

LA Unavailable

CC 52 (Petroleum and Petroleum Derivatives)

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	GB 895086		19620502	GB	
	US 3126260		1964	US	

PRAI NL 19590528

AB In order to avoid risk of fire owing to the development of static electricity during the rapid pumping of **fuel**, it is desirable to raise its elec. cond. to .gtoreq.10-12 mho/cm. This can **be** done by the addn. of a salt of a multivalent metal, such as Cr, and a C8-18 alkyl-substituted salicylic acid, but the effect thus produced decreases with time, esp. if H2O is present. The effect of the Cr salt is enhanced by further addn. of **Ca** dioctyl sulfosuccinate, but the cond. still decreases with time. The loss of cond. can **be** prevented by the further addn. of 1 p.p.m. of a polymer or copolymer contg. CO2H groups or groups derived from an oxyacid contg. S or P. Thus, the elec. cond. of a **gasoline** was 400 .times. 10-14 mho/cm. after the addn. of 1.44 .times. 10-5 moles of Cr as Cr C14-18-alkyl salicylate, decreasing to 130 after 35 days dry storage and to 80 in wet storage. The addn. of 1 p.p.m. of a stearyl methacrylate-methacrylic acid copolymer increased the initial cond. to 442, increasing to 555 after 35 days dry

and to 6250 after wet storage. Addn. of the same amt. of the **Ca** salt of a lauryl methacrylate-methacrylic acid copolymer increased the initial cond. to 1300, increasing to 5150 dry and 7000 wet after 35 days storage. The prepn. of the polymers is described.

- IT **Gasoline**
(antistatic agents, acidic polymers and salts of alkylated salicylic acid as)
- IT Conductivity, electric and(or) Conduction, electric
(of org. liquids, increasing by salts of alkylated salicylic acid stabilized by acidic polymers)
- IT Hydrocarbons, ion (trineg.)
(polymers, elec. cond. of, acidic polymers and salts of alkylated salicylic acid in increasing)
- IT Methacrylic acid, ester polymers
(elec.-cond. increase of org. liquid by)
- IT Chromium salts
(of salicylic acid derivs. as **gasoline** elec.-cond. increasers)
- IT 69-72-7, Salicylic acid
(alkyl derivs., salts, elec.-cond. increase by org. liquid)
- IT 108-31-6, Maleic anhydride
(polymers, with methacrylates, elec. cond. increase of org. liquid by)

L3 ANSWER 103 OF 104 CAPLUS COPYRIGHT 2003 ACS

AN 1959:9103 CAPLUS

DN 53:9103

OREF 53:1690f-h

TI **Antistatic** additives in the petroleum industry

AU Klinkenberg, A.; Poulston, B. V.

CS N. V. de Bataafsche Petroleum Maatschappij, Amsterdam

SO J. Inst. Petrol. (1958), 44, 380-93

DT Journal

LA Unavailable

CC 22 (Petroleum, Lubricants, and Asphalt)

AB High elec. charges are produced when petroleum products of low cond., especially those contg. water, are pumped at high flow rates (up to 10 m./sec.) through rubber hoses and steel pipes. Crude oil ordinarily has sufficient cond. to avoid danger from static charges and potential explosions by spark discharges. A no. of **antistatic** additives was tested, and "Ca aerosol OT" (soln. of the **Ca** salt of bis-(2-ethylhexyl) sulfosuccinate, contg. 2.0 wt. % **Ca** and 558 wt. % inert solvent, apparent mol. wt. 2000), and Cr-AC (soln. of the Cr salt of a mixt. of mono- and dialkylsalicylic acid, with alkyl chains of 14-18 C atoms, contg. 2.1% Cr and 30% inert solvent, apparent mol. wt. 2500). A mixt. of equal amts. of these two solns. (contg. 42% by wt. of inert solvent, 1% by wt. **Ca**, and 1.05% by wt. Cr) was more effective than either of them alone. The proposed amt. to be added/1000 cu.m. of **gasoline** is 2.2 kg. After handling and storage sufficient cond. remains for rapid pumping. Preliminary work with additive in excess of this amt. showed no adverse effects. However, even when using this additive, all equipment should be grounded.

IT **Gasoline**

(elec. charge prevention in)

IT **Petroleum**

(elec.-charge-preventing additives in industry of)

IT **Electric charge**

(exchange or transfer of, in petroleum products)

IT **Salicylic acid, acetyl deriv.**

(alkyl derivs., Cr salts, elec.-charge prevention in petroleum products by)

IT **Succinic acid, sulfo-, bis(2-ethylhexyl) ester, Ca salt**

(elec.-charge prevention in petroleum products by)

IT 104-76-7, 1-Hexanol, 2-ethyl-
(diesters with sulfosuccinic acid **Ca** salt, in elec. charge
prevention in petroleum products)